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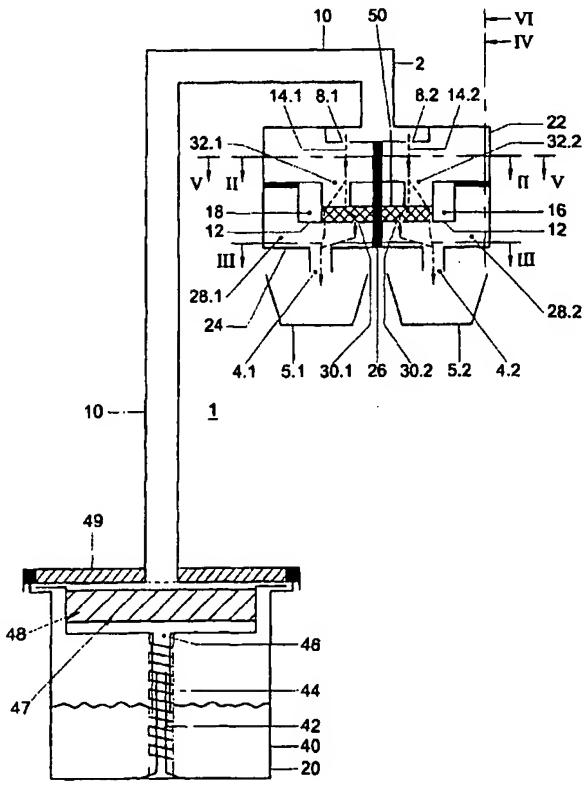
(54) Title: APPARATUS FOR PREPARING A COFFEE EXTRACT WITH A FINE-BUBBLE FROTH LAYER USING A LIQUID FLOW DECELERATING BARRIER



(57) Abstract: The invention relates to an apparatus for preparing a coffee extract with a fine-bubble froth layer, provided with at least one inlet (2) to which coffee extract is supplied, at least one outlet (4.1; 4.2) for dispensing the coffee extract with the fine-bubble froth layer and at least one liquid flow path (6) extending from the at least one inlet to the at least one outlet (2) and along which, in use, the coffee extract flows from the at least one inlet to the at least one outlet (4.1; 4.2), while in the at least one liquid flow path a buffer reservoir is included with an upright sidewall and a bottom, the at least one inlet being provided with at least one spout opening for generating at least one coffee extract is supplied to the at least one inlet. According to the invention, in the buffer reservoir, a liquid flow decelerating barrier located at a distance from the upright sidewalls is included.

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Title: Apparatus for preparing a coffee extract with a fine-bubble froth layer using a liquid flow decelerating barrier.

This invention relates to an apparatus for preparing a coffee extract with a fine-bubble froth layer, provided with at least one inlet to which coffee extract is supplied, at least one outlet for dispensing the coffee extract with the fine-bubble froth layer and at least one liquid flow path extending from the at least one inlet to the at least one outlet and along which, in use, the coffee extract flows from the at least one inlet to the at least one outlet, while in the liquid flow path a buffer reservoir is included with an upright sidewall and a bottom, the at least one inlet being provided with at least one spout opening for generating at least one coffee extract jet which, in use, squirts into the buffer reservoir when the coffee extract is supplied to the at least one inlet.

Such an apparatus is known from European patent application No. 0 878 158.

It appears that such an apparatus is especially satisfactory for preparing a coffee extract with a fine-bubble froth layer (also called café crème). The fine-bubble froth layer are coffee bubbles which are filled with air.

Although the respective apparatus is very satisfactory, the invention aims to improve the apparatus in the sense that the range of the flow rate of the at least one coffee extract jet, in which a uniform fine-bubble froth layer is formed, is increased. In particular, the invention aims to provide that a same or comparable fine-bubble froth layer is formed when the flow rate mentioned increases. Variation of the flow rate, more in particular increase of the flow rate, can be a result of, for instance, ageing of the apparatus. Often, the apparatus is provided with means known per se for supplying coffee extract, under pressure, to the inlet. These means, known per se, such as a "Napolitane" apparatus, or an apparatus comprising a pump for

generating pressure, have as a property that the pressure of the coffee extract can vary. This variation can be related to the age of the apparatus. However, this variation is even more strongly related to the thickness of the coffeebed through which hot water has to be pressed for obtaining the coffee extract which is supplied to the at least one inlet. With an increase of the thickness, the pressure drop across the coffeebed will increase, resulting in a decrease of the pressure of the coffee extract being supplied to the inlet. Conversely, the pressure of the coffee extract which is supplied to the inlet will increase when the thickness of the coffee bed decreases. As a result, the flow rate of the at least one coffee extract jet will increase. Also, when the grain size of the ground coffee of the coffee bed increases, the pressure will increase. As a result, the flow rate of the at least one coffee extract jet will increase. It is, therefore, an object of the invention to render the characteristic properties of the fine-bubble froth layer formed less dependent on the flow rate of the coffee extract jet and hence less dependent on the pressure of the coffee extract being supplied to the inlet. In this manner, it is achieved that the apparatus can function well when coffeebeds with a varying thickness and grain size are used, and with apparatuses whose pressure of the coffee extract supplied to the inlet, varies.

To that end, the apparatus according to the invention is characterized in that in the buffer reservoir a liquid flow decelerating barrier, located at a distance from the upright sidewalls, is included.

The liquid flow decelerating barrier has as a result that the magnitude of liquid flows and their associated turbulences in the buffer reservoir decreases and is suppressed. It appears that even when the flow rate of the coffee extract jet increases substantially, the magnitude of the flow and its associated turbulences in the buffer reservoir increase only little. The result of this, in turn, is that the coffee extract is formed with a fine-bubble froth layer comparable to that with the lower flow rate of the at least one coffee extract jet.

Preferably, the liquid flow decelerating barrier is disposed between a central part of the buffer reservoir and the upright sidewall so that a liquid flow from the central part in the direction of the upright sidewalls and vice versa is limited.

In particular, the at least one coffee extract jet is directed towards the central part. The coffee extract jet, directed towards the central part, will bring about the liquid flow from the central part in the direction of the upright sidewalls of the buffer reservoir. The magnitude of this liquid flow and the associated turbulence is limited in that this liquid flow finds the liquid flow decelerating barrier in its path. Preferably, the buffer reservoir is provided with at least one liquid discharge path for discharging coffee extract from the buffer reservoir to the at least one outlet, the at least one liquid discharge path having its origin, viewed from the central part, outside the liquid flow decelerating barrier. Thus, it is achieved that all liquid which is supplied via the at least one coffee extract jet to the buffer reservoir has to pass the liquid decelerating barrier in order to be able to leave the buffer reservoir. The action of the liquid flow decelerating barrier is therefore very efficient.

In particular, the liquid flow decelerating barrier extends along a first, closed curve, extending around the central part. It has appeared that with such an embodiment, in a particularly efficient manner, the liquid flow and the associated turbulence within the buffer reservoir, is suppressed.

Furthermore, it is preferred that the liquid flow decelerating barrier extends along a second closed curve extending at a distance around the first curve. It has appeared that with such an embodiment, in an especially efficient manner, the liquid flow and the associated turbulence in the buffer reservoir are suppressed. Furthermore, in particular, the liquid flow decelerating barrier is provided with a number of obstacles, spaced apart and extending upwards from the bottom of the buffer reservoir. These obstacles can, for instance, be pin-shaped. It is also possible that the liquid